

Paradise Creek Urban Riparian Restoration and Rural Farmland BMPs

The Palouse-Clearwater Environmental Institute of Moscow, Idaho is overseeing this multi-tasked project. Four of the urban sub-projects are highlighted here.

White Avenue Streambank Stabilization and Revegetation:

This project area is owned by the City of Moscow and involves a joint effort by the city, the Palouse-Clearwater Environmental Institute and community volunteers. Previous conditions along this stream segment included near vertical, slumping, eroding stream banks that were contributing to the sediment load in the creek. There was a lack of native woody vegetation close to the creek to help in shading. Paradise Creek had been dredged within the city limits many times in the past, which added to its degraded state. Historically, the city dumped asphalt on to the sides of the stream for bank stabilization. After the asphalt was removed, 258 feet of stream bank was resloped and planted with several hundred native plants. Approximately 2,280 square feet of floodplain was then hydroseeded with a native seed mix and covered with biodegradable erosion control fabric.

East Mountain View Restoration Project:

Work on this city-owned stretch of stream involved a joint effort by TerraGraphics Environmental Engineers, AmeriCorps, the City of Moscow, Washington State University environmental science students, Moscow elementary school students, Synthetic Industries, and community volunteers.

Prior to this work, this urban reach of Paradise Creek had near vertical, slumping, eroding stream banks that were straightened due to dredging activities. The majority of the stream bank soil was exposed resulting in sediment infill due to stream bank undercutting and erosion. There was very little diversity in vegetation at this site and no native woody vegetation present to shade the creek. Paradise Creek is on the 303 (d) list and is listed for sediment and temperature as pollutants in its TMDL.

The project involved the reconstruction of 1,720 feet of meandering stream channel with floodplains on both sides of the channel. Two new wetlands were constructed as well. Volunteers installed over 1,500 woody plants and 1,100 herbaceous plants. The reconstructed channel was stabilized with a number of different bank stabilization BMPs including buried log cribbing, root wad revetments, and soil wraps. Bank revetments were placed in scour susceptible zones along outer bend banks. Extensive revetments were required because of heavy springtime flows and downstream sediment concerns. Bank revetments are restricting the movement of the channel without compromising its natural appearance. Stream channel stabilization is also important due to nearby development in this urban environment.

Woody streambank vegetation was planted along all revetments. Native riparian hardwoods such as shrub willow, aspen, and dogwood will eventually provide intertwining root networks for long-term bank stabilization in these areas.

The crown of the stream channel was rounded off to make a smooth transition to the floodplain surface. All outside bank slopes were then seeded with a native riparian grass mix and lined with a 100% biodegradable geotextile fabric. The fabric was carried over the top of the slope crown onto the level edge of the floodplain surface.

Open weave straw matting was used in lower energy areas; tighter weave coir matting was used in higher energy areas. The coir fabric will retain its structural integrity for at least five years, the straw matting for two to three years. This will allow time for the establishment of a dense herbaceous ground cover on all bank surfaces.

The two newly constructed wetland areas in this project are approximately one to one and one half feet in depth with a 5:1 slope on each side. An existing wetland at the site was extended to enhance its animal habitat. Native woody vegetation was planted in the area and will continue to be enhanced over a period of years. Species were selected from a comprehensive list of riparian and upland trees and shrubs native to this environment.

In October of 2002, once all of the hardscape BMPs were in place and final grading had been completed, the Palouse-Clearwater Environmental Institute sponsored an all day workshop for the local elementary school district. At the workshop over 200 kids participated in planting a variety of native riparian plants and learning about environmental stewardship.

Streets Wetland and Lefors Wetland:

These two similar projects are located on private, urban land along separate tributaries to Paradise Creek. The purpose of both projects is to create wetlands that offer the benefits of flood control, native habitat for wildlife, filtration of pollutants, recreational and educational opportunities, and improved water quality for Paradise Creek.

Both project areas are inundated for a significant portion of the year and are therefore suitable locations for wetlands. Reed canary grass is the dominant vegetation along the stream segments. Few trees or other woody plants were present on either site and both have significant contaminant sources such as horse barns and horse pastures. One landowner visualizes a “pick your own” produce farm adjacent to the wetlands and the other would like to establish native habitat including an area for environmental educational events.

Both wetlands are about 100 feet wide and 275 feet long. Both wetlands fluctuate in depth from 1 to 1.5 feet as the season dictates. The wetland designs allow the waters of the adjacent streams to enter into the areas while providing defined channels for water movement in low flow situations. Herbaceous wetland plants will be planted to help improve water quality by reducing nutrient loading through filtering. Native willow and Red-Osier dogwood cuttings will be planted along the banks of each stream to secure the banks and introduce shade to the system. This will create a woody riparian buffer. Woody riparian buffers offer many benefits, including filtration of runoff, wildlife habitat, and flood water retention. All plantings are protected from vole damage with plastic tubes.

The following photographs depict some of the work accomplished along the urban portion of Paradise Creek during 2002.



Installation of biodegradable straw/coconut fiber logs for stream bank stabilization at White Avenue sub-project. This is one of many BMPs used on Paradise Creek



White Avenue bank stabilization and restoration completed



Lefor's Wetland Prior to Planting



Volunteers at work planting native plants at Lefor's Wetland



Initial Grading at Streets Wetland



Streets Wetland shortly after completion



Hundreds of local school kids participated in the all-day workshop at East Mountain Project



They learned about microorganisms, biodiversity and the need for riparian environments



They learned about riparian wildlife, the need for undeveloped floodplains



They learned how stream channels are reconstructed



They learned how to plant hundreds of plants



They learned how to take better care of the environment